

Water Supply

PROGRAM DESCRIPTION

Residents of Fairfax County receive public water service from one of three water agencies: Fairfax Water, City of Fairfax Department of Transit and Utilities, and the Falls Church Department of Public Utilities. The Towns of Vienna and Herndon, while operating their own water distribution systems, purchase water from the City of Falls Church and Fairfax Water, respectively. In terms of meeting water supply needs, the towns are dependent on these two water agencies. Using recent estimated averages, Fairfax Water serves 79 percent of Fairfax County residents, Falls Church serves 13 percent, the City of Fairfax one percent and the remaining 7 percent of the residents receive water from their own individual wells.

LINK TO THE COMPREHENSIVE PLAN

Fairfax County's Comprehensive Plan has established a number of objectives and policies in order to:

- ✓ Plan and provide for facilities to treat, transmit, and distribute a safe and adequate potable water supply.
- ✓ Continue the implementation of expansion and improvement programs at water treatment facilities, including the Corbalis Water Treatment Plant.
- ✓ Construct additional water transmission facilities, including the Corbalis-Fox Mill Water Main, Fox Mill-Vale Road Water Main, and the Waples Mill–Vale Road Water Main.

Source: 2003 Edition of the Fairfax County Comprehensive Plan, as amended

CURRENT PROGRAM INITIATIVES

While Fairfax County has neither direct administrative nor budgetary control over water suppliers, the importance of water facilities to County planning is recognized. The Board of Supervisors has entered into an agreement with Fairfax Water which requires Board approval of all capital projects undertaken by Fairfax Water. Fairfax Water projects included in this CIP represent a program guided by the objectives of the Comprehensive Plan and endorsed by the Board of Supervisors. In the interest of providing a broader picture to the citizens of Fairfax County, the independent program for Falls Church is also presented. Inclusion in this document represents neither concurrence nor approval by Fairfax County of the individual projects proposed by Falls Church. It is presented for information purposes only. Additional information can be found in Fairfax Water's ten year Capital Improvement Program, which is available directly from Fairfax Water.

Fairfax Water

The principal sources of water for Fairfax Water are the Occoquan River and the Potomac River. Supplementary sources of water include interconnections with the Cities of Fairfax and Falls Church, Town of Vienna, Loudoun County, and Arlington County. The Occoquan Reservoir is impounded by a gravity-type concrete dam across the Occoquan River, a few miles upstream of its confluence with the Potomac River. The dam was constructed in 1957. The drainage area of the Occoquan River above the dam is approximately 595 square miles. The dam impounds about 8.3 billion gallons of water when filled to the crest of the dam at Elevation 122 feet, mean sea level. The present Occoquan River supply has a safe yield of about 72 million gallons per day (MGD).

Treatment of water from the Occoquan Reservoir is provided by the 120 MGD Griffith Water Treatment Plant in Lorton, which was placed in service in 2006. This facility applies various chemicals for coagulation, the control of taste and odors, fluoridation, and disinfection. The Griffith Treatment Plant replaced the Lorton and Occoquan Treatment Plants.

Construction of the intake structure, raw water pumping station and initial phase of the Corbalis Treatment Plant commenced in 1978 and was placed into operation in 1982. A major plant expansion was begun in 1992 and completed in 1995. The Corbalis Treatment Plant is authorized by the Virginia Department of Health to operate at a filtration rate of 150 MGD. Facilities are available for applying various chemicals for coagulation, control of taste and odors, fluoridation, and disinfection. Construction of the next increment of capacity began in 2005. When completed, this will increase the capacity of the Corbalis plant to 225 MGD.

Twenty-nine booster pumping stations are located within the distribution system to provide adequate pressure throughout Fairfax Water's service area. A total of 42 million gallons (MG) of distribution system storage is provided at 31 locations throughout Fairfax County. There are approximately 3,184 miles of water main up to 54 inches in diameter in the system. The distribution system is interconnected at 76 locations with 12 other water systems in northern Virginia.

Development of Fairfax Water's supply, treatment, transmission, and distribution facilities is conducted in accordance with a ten year Capital Improvement Program. Highlights of the current program include:

- **Construction of the new F. P. Griffith Water Treatment Plant:** When completed, this facility will utilize state-of-the-art treatment techniques capable of meeting the newly adopted water quality requirements of the Safe Drinking Water Act.
- **Capacity Development at the Corbalis Water Treatment Plant:** Construction of the next 75 MGD increment of the Corbalis Plant is underway to provide additional production capacity needed to satisfy projected demand for water within Fairfax Water's service area.
- **Construction of various Transmission Mains:** Transmission mains include: Corbalis to Fox Mill Water Main (Phase II), Fox Mill to Vale Road Water Main, Waples Mill to Vale Road Water Main, and the Hunter Mill Road Water Main.
- **System Reliability Improvements:** Construction of back-up power generation facilities and additional system storage to mitigate plant and pumping station failures due to interruptions in commercially supplied power.
- **Implementation of a Supervisory Control and Data Acquisition (SCADA) system:** By providing remote monitoring and control capability, SCADA will promote more efficient system performance during both routine and alternative operations.
- **Watershed Management Activities:** Fairfax Water continues to advocate watershed protection through the following projects and programs: support of the Occoquan Watershed Monitoring Program and the Occoquan Nonpoint Source Program, study of critical watershed areas, increased involvement in watershed and water quality issues, and analysis of ongoing activities in the watershed.

Falls Church Department of Public Utilities

Falls Church buys treated water from the U.S. Corps of Engineers via a 36-inch connection to the Dalecarlia Filter Plant located on MacArthur Boulevard in the District of Columbia. The Corps obtains its raw water from the Potomac River at Great Falls. The Falls Church Water System has a current system capacity of 45 MGD. The Falls Church Water System consists of the main pumping station at Chain Bridge and seven booster pumping stations. The system includes 10 storage facilities with a total capacity of approximately 14.2 MGD. The new Scotts Run Pumping Station was put in service in early 2007. The overall system consists of approximately 487 miles of pipe ranging from 4 inches to 42 inches.

CURRENT PROJECT DESCRIPTIONS

FAIRFAX WATER

1. **General and Administrative.** \$112,060,000 for annual expenses associated with administration and overhead. These expenses include materials and supplies; refund of advances; and costs associated with net revenue funded projects, but not attributed to a single project or program.
2. **Subdivision and Other Development Projects.** \$11,100,000 for annual expenses associated with the review and approval of plans for water main installation associated with land development activities. This project also includes provisions for Fairfax Water inspection of water mains installed by land development contractors.
3. **Extraordinary Maintenance and Repairs.** \$142,129,000 for extraordinary maintenance and major repair of supply, treatment, transmission, distribution and general plant facilities associated with a specific project.
4. **Additions, Extensions, and Betterments.** \$139,455,000 for improvement and betterment of existing supply, treatment, transmission, distribution and general plant facilities associated with a specific project.
5. **General Studies and Programs.** \$27,902,000 for general studies, programs, engineering and research pertaining to water quality, water supply, and system development.
6. **Treatment Facilities.** \$188,000,000 for the 120 MGD Griffith Water Treatment Plant on the Occoquan Reservoir.
7. **Transmission Facilities.** \$19,425,000 for the design and construction of a transmission SCADA system and various pumping station modifications throughout Fairfax County.
8. **General Plant Facilities.** \$48,783,000 for annual expenses attributed to administration, overhead, and bond financing for projects funded by current bond issue, future bond issue, or funds on hand.
9. **Potomac Stage III Treatment Facilities.** \$199,500,000 for the design and construction of the next production capacity increment at the Corbalis Water Treatment Plant.
10. **Potomac Stage III Transmission Facilities.** \$78,258,000 for the design and construction of various transmission facilities primarily associated with development of the Potomac River Water Supply Facilities. Water main projects include the Corbalis-Fox Mill Water Main, Fox Mill-Vale Road Water Main, Waples Mill-Vale Road Water Main, and the Hunter Mill Road Water Main.
11. **Potomac Stage III General Plant Facilities.** \$49,880,000 for annual expense attributed to administration, overhead, and bond financing associated with development of the Potomac River Water Supply Facilities funded by future bond issue and funds on hand.

FALLS CHURCH DEPARTMENT OF PUBLIC UTILITIES

12. **Water Main Replacement (Route 50 Water Main).** \$5,600,000 to implement additional redundancy and security for the City's water system with a proposed water main extending from the Capital Beltway to Seven Corners.
13. **Seven Corners System Improvements.** \$2,325,000 for water main improvements and a new storage tank to improve pressure and fire protection in the Seven Corners area.
14. **Water Main Replacement Program.** \$8,000,000 over five years as part of a systematic approach to water main replacement throughout the City's water system, which is based on several factors, including main break history, impact to customers, and traffic impacts. Each year this list is reevaluated and priority replacement projects are selected for construction.
15. **McLean Pump Station.** \$675,000 to rehabilitate and upgrade this existing facility.
16. **Kirby Road Water Main.** \$9,900,000 to construct a 36-inch water main from Chain Bridge Pumping Station to the George Mason Pumping Station; from there a 24-inch water main in Idylwood Road to the Dunn Loring Tank and Pumping Station. This main will provide increased water volume to the Dunn Loring and Tysons Corner areas.
17. **Washington Aqueduct Residuals Disposal.** \$11,450,000 as the City's share of a project to eliminate discharge of water treatment residuals to the Potomac River.
18. **Chesterbrook Pump Station Improvements.** \$225,000 to complete the rehabilitation and upgrade of this facility.

PROJECT COST SUMMARIES
WATER SUPPLY
(\$000's)

Project Title/ Project Number	Source of Funds	Budgeted or Expended Through FY 2007					Total FY2008-FY2012	Total FY2013-FY2017	Total Project Estimate
			FY 2008	FY 2009	FY 2010	FY 2011			
Fairfax County Construction*									
1. General and Administrative	SR	6,590	8,010	8,740	9,100	10,190	15,190	51,230	54,240
2. Subdivision and Other Development Projects	SR	1,020	1,040	1,060	1,080	1,100	1,120	5,400	4,680
3. Extraordinary Maintenance and Repairs	SR	22,214	15,930	11,747	12,400	12,028	12,555	64,660	55,255
4. Additions, Extensions, and Betterments	SR	37,288	36,331	21,043	9,147	6,335	5,858	78,714	23,453
5. General Studies and Programs	SR	3,449	7,399	7,130	1,590	1,285	1,282	18,686	5,767
6. Treatment Facilities	SR	188,000						0	188,000
7. Transmission Facilities	SR	10,575	1,250	1,865	2,185	2,485		7,785	1,065
8. General Plant Facilities	SR	44,763	610	510	910	1,260		3,290	730
9. Potomac Stage III Treatment Facilities	SR	163,720	26,400	9,380				35,780	199,500
10. Potomac Stage III Transmission Facilities	SR	20,214	15,800	7,000	10,000	6,368		39,168	18,876
11. Potomac Stage III General Plant Facilities	SR	22,660	4,570	4,440	4,180	3,240		16,430	10,790
Subtotal		520,493	117,340	72,915	50,592	44,291	36,005	321,143	174,856
Falls Church Department of Public Utilities 1/									
12. Water Main Replacement (Route 50 Water Main)	RB	2,700	2,900					2,900	5,600
13. Seven Corners System Improvements	RB	1,240		385	700			1,085	2,325
14. Water Main Replacement Program	RB	0	1,000	1,000	2,000	2,000	2,000	8,000	8,000
15. McLean Pump Station	RB	0	75	600				675	675
16. Kirby Road Water Main	RB	0					700	700	9,900
17. Washington Aqueduct Residuals Disposal	RB	9,250	1,800	400				2,200	11,450
18. Chesterbrook Pump Station Improvements	RB	0	225					225	225
Subtotal		13,190	6,000	2,385	2,700	2,000	2,700	15,785	9,200
GRAND TOTAL		\$533,683	\$123,340	\$75,300	\$53,292	\$46,291	\$38,705	\$336,928	\$184,056
									\$1,054,667

Key: Stage of Development	
	Feasibility Study or Design
	Land Acquisition
	Construction

Notes:	
Numbers in <i>bold italics</i> represent funded amounts.	
A "C" in the 'Budgeted or Expended' column denotes a continuing project.	
* The amounts for these 11 projects are based on Fairfax Water's 2007 Capital Improvement Program, which covers the period 2007-2016. The FY2013-FY2017 column includes only the amount thru FY2016. Funding for FY2017 has not yet been determined.	

Key: Source of Funds	
B	Bonds
G	General Fund
X	Other
U	Undetermined
SR	Systems Revenues
RB	Revenue Bonds



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